

WHAT IS CLAIMED IS:

1. A method of absorbing energy in a voltage transient in an electrical supply circuit, the method comprising:

detecting the onset of the voltage transient; and

5 connecting a phase of an electrical machine, or at least one phase of a polyphase electrical machine having independent phase windings, across the supply circuit in response to detecting the onset so as to absorb the energy in the transient.

10 2. A method as claimed in claim 1 including detecting a decay in the voltage transient and assuming normal operation of the electrical machine when the transient voltage has decayed below a predetermined magnitude.

15 3. A method as claimed in claim 1, in which the electrical machine is a switched reluctance machine.

4. A method as claimed in claim 1, in which the electrical machine is connected across the electrical supply circuit by switch means serially connected with the at least one phase, the method further comprising using the switch means to operate the electrical machine normally and to connect the at least one phase across an electrical load.

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5. A method as claimed in claim 1, in which the at least one phase is connected across the supply circuit after the voltage transient has exceeded a predetermined magnitude.

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6. A method as claimed in claim 5 in which the at least one phase is connected across the supply circuit after the voltage transient has exceeded the predetermined magnitude for a predetermined period.

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7. A method as claimed in claim 1, in which each of a plurality of phases is connected across the supply circuit either simultaneously or in sequence and is disconnected from the supply circuit either simultaneously or in sequence when the transient has decayed to a predetermined level.

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8. A method as claimed in claim 1, including overriding normal operation of the electrical machine in response to the voltage transient.

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9. An electrical system comprising an electrical supply, an electrical machine having at least one independent phase winding and a switch circuit for connecting the or each phase winding of the machine across the electrical supply, means for detecting a voltage transient across the supply to produce an

output, and control means responsive to the output to connect the or at least one phase winding of the electrical machine across the supply to absorb energy in the voltage transient.

5      10.    A system as claimed in claim 9, including means for detecting a decay in the voltage transient to produce another output, the control means being responsive to the other output to assume normal operation of the machine.

10      11.    A system as claimed in claim 9, in which the electrical machine is a switched reluctance machine.

12.    A system as claimed in claim 9, in which the switch circuit is also arranged to control the normal operation of the switched reluctance machine.

15      13.    A system as claimed in claim 9, in which the means for detecting a voltage transient includes a threshold detector arranged to produce the output when the voltage of the electrical supply exceeds a predetermined level, the control means being responsive to the output to connect the at least one phase of the electrical machine across the supply to absorb the energy in the voltage  
20      transient in the at least one phase.

14. A system as claimed in claim 13 in which the threshold detector is operable to produce the output when the voltage across the electrical supply exceeds the predetermined level for a predetermined period.

5 15. A system as claimed in claim 9, in which the electrical machine has a plurality of phase windings and the control means is operable to disconnect the phase windings from the electrical supply by actuating the switch circuit to disconnect the phase windings in sequence.

10 16. An electrical system comprising an electrical supply, an electrical machine having at least one independent phase winding and a switch circuit for connecting the or each phase winding of the machine across the electrical supply, a detector for detecting a voltage transient across the supply to produce an output, and a controller responsive to the output to connect the or at least one  
15 phase winding of the electrical machine across the supply to absorb energy in the transient voltage.

17. An electrical system comprising an electrical supply, an electrical machine having at least one independent phase winding and a switch circuit for  
20 connecting the or each phase winding of the machine across the electrical supply, a detector for detecting a voltage transient across the supply to produce

an output, and a controller responsive to the output to connect the or at least one phase winding of the electrical machine across the supply to absorb energy in the voltage transient, the detector including a threshold detector arranged to produce the output when the voltage of the electrical supply exceeds a

5 predetermined level, the controller being responsive to the output to connect the at least one phase of the electrical machine across the supply to absorb the energy in the voltage transient in the at least one phase.